

**Missouri Department of Natural Resources**  
**Main Ditch - WBID 2814**  
**Water Chemistry Data, 2000-2004**

Org	Site	Site Name	Yr	Mo	Dy	Time	H	Flow	C	DO	pH	SC	NH3N	TSS	VSS
MDNR	2814/3.7	Main Ditch 9 mi. below Poplar Bluff lgn. Outfall	2000	8	30	1344			35	12.8	8.7	488	0.02499		
MDNR	2814/3.7	Main Ditch 9 mi. below Poplar Bluff lgn. Outfall	2000	8	30	620		28.1	25	5.2	8	523	0.14		
MDNR	2814/3.7	Main Ditch 9 mi. below Poplar Bluff lgn. Outfall	2000	8	31	1350			32	13.9	8.6	429	0.02499		
MDNR	2814/3.7	Main Ditch 9 mi. below Poplar Bluff lgn. Outfall	2000	8	31	630			26	4.9	8	442	0.12		
MDNR	2814/7.2	Main Ditch 5.8 mi. below Poplar Bluff lgn.outfall	2000	8	30	1407			34	19.1	9	465	0.02499		
MDNR	2814/7.2	Main Ditch 5.8 mi. below Poplar Bluff lgn.outfall	2000	8	30	651		14.7	25	5	7.9	497	0.2		
MDNR	2814/7.2	Main Ditch 5.8 mi. below Poplar Bluff lgn.outfall	2000	8	31	1325			30	18.6	9	422	0.02499		
MDNR	2814/7.2	Main Ditch 5.8 mi. below Poplar Bluff lgn.outfall	2000	8	31	605			26	2.9	7.8	448	0.23		
MDNR	2814/7.2	Main Ditch 5.8 mi. below Poplar Bluff lgn.outfall	2002	7	9	1330			34	14.4	9.1	334	0.08	32	10
MDNR	2814/7.2	Main Ditch 5.8 mi. below Poplar Bluff lgn.outfall	2002	7	9	545			29	5.4	8.8	322	0.39	29	6
MDNR	2814/7.2	Main Ditch 5.8 mi. below Poplar Bluff lgn.outfall	2002	7	10				34	14.4	9.1	341	0.02499	32	12
MDNR	2814/7.2	Main Ditch 5.8 mi. below Poplar Bluff lgn.outfall	2002	7	10				29	4.2	8.6	340	0.18	34	14
MDNR	2814/7.2	Main Ditch 5.8 mi. below Poplar Bluff lgn.outfall	2002	8	6	1415			32.5	18.7	9.3	413	0.02499	68	30
MDNR	2814/7.2	Main Ditch 5.8 mi. below Poplar Bluff lgn.outfall	2002	8	6	710			28	3.3	8	464	0.24	40	8
MDNR	2814/7.2	Main Ditch 5.8 mi. below Poplar Bluff lgn.outfall	2002	8	7	1410			30	16.6	9.2	423	0.02499	74	26
MDNR	2814/7.2	Main Ditch 5.8 mi. below Poplar Bluff lgn.outfall	2002	8	7	705			25	3.4	8	451	1.36	38	10
MDNR	2814/9.4	Main Ditch 3.8 mi. below Poplar Bluff lgn.outfall	2000	8	30	721		8.14	27	6.1	8.4	460	0.17		
MDNR	2814/9.4	Main Ditch 3.8 mi. below Poplar Bluff lgn.outfall	2000	8	30	1447			33	9.6	8.7	453	0.37		
MDNR	2814/9.4	Main Ditch 3.8 mi. below Poplar Bluff lgn.outfall	2000	8	31	1405			34	18.2	9.4	443	0.19		
MDNR	2814/9.4	Main Ditch 3.8 mi. below Poplar Bluff lgn.outfall	2000	8	31	640			26	2.2	8.3	442	0.23		
MDNR	2814/9.4	Main Ditch 3.8 mi. below Poplar Bluff lgn.outfall	2002	7	9	610			27	3.2	8.4	315	0.02499	24	5
MDNR	2814/9.4	Main Ditch 3.8 mi. below Poplar Bluff lgn.outfall	2002	7	9	1350			37	16.8	9.5	326	0.02499	32	12
MDNR	2814/9.4	Main Ditch 3.8 mi. below Poplar Bluff lgn.outfall	2002	7	10				28	2.9	8.5	324	0.02499	25	7
MDNR	2814/9.4	Main Ditch 3.8 mi. below Poplar Bluff lgn.outfall	2002	7	10				37	17.6	9.6	333	0.02499	29	14
MDNR	2814/9.4	Main Ditch 3.8 mi. below Poplar Bluff lgn.outfall	2002	8	6	640			28.5	3.1	7.9	416	0.02499	53	23
MDNR	2814/9.4	Main Ditch 3.8 mi. below Poplar Bluff lgn.outfall	2002	8	6	1345			33	13.5	8.9	413	0.14	34	13
MDNR	2814/9.4	Main Ditch 3.8 mi. below Poplar Bluff lgn.outfall	2002	8	7	635			24	3.9	8.2	425	0.02499	47	18
MDNR	2814/9.4	Main Ditch 3.8 mi. below Poplar Bluff lgn.outfall	2002	8	7	1335			31	15.5	9.2	414	0.07	43	18
MDNR	2814/11.4	Main Ditch 1.5 mi. below Poplar Bluff lgn.outfall	2000	8	30	1340			30	13.7	9.4	451	1.12		
MDNR	2814/11.4	Main Ditch 1.5 mi. below Poplar Bluff lgn.outfall	2000	8	30	715		3.46	26	0.6	8.7	486	1.93		
MDNR	2814/11.4	Main Ditch 1.5 mi. below Poplar Bluff lgn.outfall	2000	8	31	1435			31	16	9.5	462	1.13		
MDNR	2814/11.4	Main Ditch 1.5 mi. below Poplar Bluff lgn.outfall	2000	8	31	710			27	0.6	8.8	483	1.94		

Org	Site	Site Name	Yr	Mo	Dy	Time	H	Flow	C	DO	pH	SC	NH3N	TSS	VSS
MDNR	2814/11.4	Main Ditch 1.5 mi. below Poplar Bluff lgn.outfall	2002	7	8	1830			16.4						
MDNR	2814/11.4	Main Ditch 1.5 mi. below Poplar Bluff lgn.outfall	2002	7	9	1410			33	10.2	9.4	331	0.02499	32	12
MDNR	2814/11.4	Main Ditch 1.5 mi. below Poplar Bluff lgn.outfall	2002	7	9	630			28	1.4	8.8	320	0.23	37	6
MDNR	2814/11.4	Main Ditch 1.5 mi. below Poplar Bluff lgn.outfall	2002	7	9	615				1.4					
MDNR	2814/11.4	Main Ditch 1.5 mi. below Poplar Bluff lgn.outfall	2002	7	9	1645				6.5					
MDNR	2814/11.4	Main Ditch 1.5 mi. below Poplar Bluff lgn.outfall	2002	7	9	1430				12.1					
MDNR	2814/11.4	Main Ditch 1.5 mi. below Poplar Bluff lgn.outfall	2002	7	10				32	9.8	9.4	340	0.17	48	18
MDNR	2814/11.4	Main Ditch 1.5 mi. below Poplar Bluff lgn.outfall	2002	7	10				29	1.2	8.8	341	0.35	40	6
MDNR	2814/11.4	Main Ditch 1.5 mi. below Poplar Bluff lgn.outfall	2002	8	5	1300				6.7					
MDNR	2814/11.4	Main Ditch 1.5 mi. below Poplar Bluff lgn.outfall	2002	8	5	1815				16.7					
MDNR	2814/11.4	Main Ditch 1.5 mi. below Poplar Bluff lgn.outfall	2002	8	6	1255			30	9.3	9.2	425	0.94	58	25
MDNR	2814/11.4	Main Ditch 1.5 mi. below Poplar Bluff lgn.outfall	2002	8	6	600			28.5	1	8.3	443	1.42	26	10
MDNR	2814/11.4	Main Ditch 1.5 mi. below Poplar Bluff lgn.outfall	2002	8	6	530				0.8					
MDNR	2814/11.4	Main Ditch 1.5 mi. below Poplar Bluff lgn.outfall	2002	8	6	1515				6.6					
MDNR	2814/11.4	Main Ditch 1.5 mi. below Poplar Bluff lgn.outfall	2002	8	6	1315				10					
MDNR	2814/11.4	Main Ditch 1.5 mi. below Poplar Bluff lgn.outfall	2002	8	7	1305			28	12.2	9.4	425	0.36	67	25
MDNR	2814/11.4	Main Ditch 1.5 mi. below Poplar Bluff lgn.outfall	2002	8	7	600			26	1.1	8.5	443	1.07	32	18
MDNR	2814/11.4	Main Ditch 1.5 mi. below Poplar Bluff lgn.outfall	2002	8	7	1030				8.5					
MDNR	2814/11.4	Main Ditch 1.5 mi. below Poplar Bluff lgn.outfall	2002	8	7	215				8.7					
MDNR	2814/12.4	Main Ditch 0.5 mi. below Poplar Bluff lgn.outfall	2000	8	30	1415			34	14.9	9.8	462	0.82		
MDNR	2814/12.4	Main Ditch 0.5 mi. below Poplar Bluff lgn.outfall	2000	8	30	655	3.5		28	1	9.2	482	1.51		
MDNR	2814/12.4	Main Ditch 0.5 mi. below Poplar Bluff lgn.outfall	2000	8	31	1305			32	16.5	9.8	466	0.75		
MDNR	2814/12.4	Main Ditch 0.5 mi. below Poplar Bluff lgn.outfall	2000	8	31	725			27	1.3	9.2	475	1.6		
MDNR	2814/12.4	Main Ditch 0.5 mi. below Poplar Bluff lgn.outfall	2002	7	9	1415			35	11.2	9.9	340	0.22	17	11
MDNR	2814/12.4	Main Ditch 0.5 mi. below Poplar Bluff lgn.outfall	2002	7	9	635			28	2.2	9.5	338	0.4	12	2.499
MDNR	2814/12.4	Main Ditch 0.5 mi. below Poplar Bluff lgn.outfall	2002	7	10				35	11.9	9.7	342	0.23	92	16
MDNR	2814/12.4	Main Ditch 0.5 mi. below Poplar Bluff lgn.outfall	2002	7	10				29	1.4	9.2	342	0.58	24	13
MDNR	2814/12.4	Main Ditch 0.5 mi. below Poplar Bluff lgn.outfall	2002	8	6	1350			33	10.3	8.8	416	0.62	35	22
MDNR	2814/12.4	Main Ditch 0.5 mi. below Poplar Bluff lgn.outfall	2002	8	6	645			29	0.499	8.9	423	1.12	43	28
MDNR	2814/12.4	Main Ditch 0.5 mi. below Poplar Bluff lgn.outfall	2002	8	7	1350			33	13.2	9.5	423	0.37	37	22
MDNR	2814/12.4	Main Ditch 0.5 mi. below Poplar Bluff lgn.outfall	2002	8	7	625			27	0.499	9.2	433	1.07	34	22
MDNR	2814/12.4	Main Ditch 0.5 mi. below Poplar Bluff lgn.outfall	2004	5	13	1140				6.7	7.5		2.72	28	
MDNR	2814/12.8	Poplar Bluff Lagoon Effluent	2000	8	30	1305	4.85		30	9.3	9.6	447	1.75		
MDNR	2814/12.8	Poplar Bluff Lagoon Effluent	2000	8	30	640			28	9.7	9.5	483			
MDNR	2814/12.8	Poplar Bluff Lagoon Effluent	2000	8	31	755			30	13.3	9.7	478	1.85		
MDNR	2814/12.8	Poplar Bluff Lagoon Effluent	2000	8	31	1145			28	9	9.5	478			

Org	Site	Site Name	Yr	Mo	Dy	Time	H	Flow	C	DO	pH	SC	NH3N	TSS	VSS
MDNR	2814/12.8	Poplar Bluff Lagoon Effluent	2002	7	9	1400			33	11.5	10.1	395	0.47	31	23
MDNR	2814/12.8	Poplar Bluff Lagoon Effluent	2002	7	9	610			30	10.1	10.2	398	0.56	15	8
MDNR	2814/12.8	Poplar Bluff Lagoon Effluent	2002	7	10				33	15.2	9.7	395	0.67	26	18
MDNR	2814/12.8	Poplar Bluff Lagoon Effluent	2002	7	10				31	7.9	9.7	391	0.69	28	23
MDNR	2814/12.8	Poplar Bluff Lagoon Effluent	2002	8	6	1325			32	7.6	9.1	437	0.86	37	32
MDNR	2814/12.8	Poplar Bluff Lagoon Effluent	2002	8	6	630			30	3.5	9.6	438	1.12	44	41
MDNR	2814/12.8	Poplar Bluff Lagoon Effluent	2002	8	7	1300			30	3.9	9.6	440	1.09	35	29
MDNR	2814/12.8	Poplar Bluff Lagoon Effluent	2002	8	7	600			28	1.5	9.7	466	1.36	30	26
MDNR	2814/12.8	Poplar Bluff Lagoon Effluent	2004	5	13	1045				8.9	8.2		8.16	14	

The water quality standard for protection of aquatic life for pH is 6.5 to 9.0. For pH, the Listing Methodology Document allows a water to be judged as impaired if more than 10 percent of the measurements fail to meet the water quality standard.

Four of 13 pH measurements exceeded the standard .5 miles downstream of the wastewater treatment facility, or 30.8 percent. The binomial probability is .007. Since this probability is less than the minimum allowable type one error rate of 0.1, a one-mile segment is judged to be **impaired** by pH.

One of 36 measurements exceed the standard further downstream of the wastewater treatment facility, or 2.8 percent. The binomial probability is more than the minimum allowable type one error rate of 0.1, this segment is judged to be **unimpaired** by pH.

The chronic water quality standard for protection of aquatic life for ammonia is temperature and pH dependent. A water is judged to be impaired if the chronic numeric criteria are exceeded one more than one occasion, with an exposure period of 30 days, during the last three years data is available. Based on consistently high pH values and exceedence of the standard on all days sampled in 2000 and 2002 0.5 miles below the outfall, 30-day exceedences are likely to have occurred. Thirty-day periods during representative conditions of non-storm water flow during the last three years data is available. Historical rainfall data was reviewed from the Glennonville weather station which is part of the Commercial Agriculture Automated Weather Station Network ([agebb.missouri.edu/weather/history/](http://agebb.missouri.edu/weather/history/)).

Therefore, a one-mile segment below the wastewater treatment facility is judged to be **impaired** by ammonia.

The water quality standard for protection of aquatic life for water temperature is 32.22. For water temperature, the Listing Methodology Document allows a water to be judged as impaired if more than 10 percent of the measurements fail to meet the water quality standard. Sixteen of 52 water temperature measurements on Main Ditch exceeded the standard, or 30.8 percent. The z calculation is 5.0. Since this is more than the tabular z value of 1.382, this water is judged to be **impaired** by temperature.

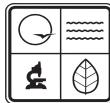
Because high temperatures persist several miles below the wastewater treatment plant and are present in the upstream tributary, Pike Creek, it is believed there are additional factors contributing to high temperature in Main Ditch.

The water quality standard for protection of aquatic life for dissolved oxygen is 5mg/L. For dissolved oxygen, the Listing Methodology Document allows a water to be judged as impaired if measurements on 10 percent of the days fail to meet the water quality standard. Twenty-eight of 38 days exceeded the standard at various sites, or 74 percent. The binomial probability is less than the minimum allowable type one error rate of 0.2, this stream is judged to be **impaired** by low dissolved oxygen.

Because low dissolved oxygen levels persist several miles below the wastewater treatment plant and are present in the upstream tributary, Pike Creek, it is believed that there are additional factors contributing to low dissolved oxygen in Main Ditch.

A Total Maximum Daily Load for Main Ditch below the wastewater treatment facility for biochemical oxygen demand, volatile suspended solids, and low dissolved oxygen was approved by EPA in 2005.

Missouri Department of Natural Resources' Water Protection Program, 573-751-1300, [www.dnr.mo.gov](http://www.dnr.mo.gov)  
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## Missouri Department of Natural Resources

### Pike Creek - WBID 2815

Water Chemistry Data, 2000-2004

Org	Site	Site Name	Yr	Mo	Dy	Time	H	Flow	C	DO	pH	SC	NH3N	TSS	VSS
MDNR	2815/0.9	Pike Creek 0.7 mi.ab. Poplar Bluff lgn.outfall	2000	8	30	620		0.23	28	4.3	7.6	148	0.02499		
MDNR	2815/0.9	Pike Creek 0.7 mi.ab. Poplar Bluff lgn.outfall	2000	8	30	1435			34	7.7	8.3	144	0.02499		
MDNR	2815/0.9	Pike Creek 0.7 mi.ab. Poplar Bluff lgn.outfall	2000	8	31	740			28	4.3	7.9	150	0.02499		
MDNR	2815/0.9	Pike Creek 0.7 mi.ab. Poplar Bluff lgn.outfall	2000	8	31	1250			32	6.6	7.9	149	0.02499		
MDNR	2815/0.9	Pike Creek 0.7 mi.ab. Poplar Bluff lgn.outfall	2002	7	9	540			28	3.8	7.8	168	0.02499	12	2.499
MDNR	2815/0.9	Pike Creek 0.7 mi.ab. Poplar Bluff lgn.outfall	2002	7	9	1330			33	8.8	8	159	0.02499	7	2.499
MDNR	2815/0.9	Pike Creek 0.7 mi.ab. Poplar Bluff lgn.outfall	2002	7	10				28	3.6	7.4	172	0.02499	13	2.499
MDNR	2815/0.9	Pike Creek 0.7 mi.ab. Poplar Bluff lgn.outfall	2002	7	10				33	9.2	7.4	167	0.02499	8	2.499
MDNR	2815/0.9	Pike Creek 0.7 mi.ab. Poplar Bluff lgn.outfall	2002	8	5	800				8.3					
MDNR	2815/0.9	Pike Creek 0.7 mi.ab. Poplar Bluff lgn.outfall	2002	8	5	1930				8.8					
MDNR	2815/0.9	Pike Creek 0.7 mi.ab. Poplar Bluff lgn.outfall	2002	8	6	1300			31	6	7.1	140	0.02499	14	2.499
MDNR	2815/0.9	Pike Creek 0.7 mi.ab. Poplar Bluff lgn.outfall	2002	8	6	600			29.5	3.2	7.5	141	0.02499	27	2.499
MDNR	2815/0.9	Pike Creek 0.7 mi.ab. Poplar Bluff lgn.outfall	2002	8	6	800				2.8					
MDNR	2815/0.9	Pike Creek 0.7 mi.ab. Poplar Bluff lgn.outfall	2002	8	6	2400				8.8					
MDNR	2815/0.9	Pike Creek 0.7 mi.ab. Poplar Bluff lgn.outfall	2002	8	7	655			27	3.7	7.5	138	0.02499	40	8
MDNR	2815/0.9	Pike Creek 0.7 mi.ab. Poplar Bluff lgn.outfall	2002	8	7	1330			31	6.9	7.5	136	0.02499	18	5
MDNR	2815/0.9	Pike Creek 0.7 mi.ab. Poplar Bluff lgn.outfall	2002	8	7	500				8.9					
MDNR	2815/0.9	Pike Creek 0.7 mi.ab. Poplar Bluff lgn.outfall	2004	5	13	1115				6.2	7.6		0.01499	27	

Six of eight days exceeded the standard in Pike Creek, or 75.0 percent. The binomial probability is 0. Since this probability is less than the minimum allowable type one error rate of 0.1, Pike Creek is judged to be **impaired** by low dissolved oxygen.

The water quality standard for protection of aquatic life for water temperature is 32.22. For water temperature, the LMD allows a water body to be judged as impaired if more than ten percent of the measurements fail to meet the water quality standard. Three of 12 water temperature measurements on Pike exceeded the standard, or 25.0 percent. The binomial probability is .026. Since this is more than the Since this probability is less than the minimum allowable type one error rate of 0.1, Pike Creek is judged to be **impaired** by temperature.

Missouri Department of Natural Resources, Water Protection Program, (573) 751-1300, [www.dnr.mo.gov](http://www.dnr.mo.gov)

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